Claims

1. A rotation system with three degrees of freedom comprising a rotor comprising a part or a whole of a sphere, an indication bar, at least one slider, at least one base, four shafts, six bearings, and three first to third guide rails,

wherein

said rotor includes said indication bar,

said first guide rail is installed on said base by using two said shafts and two said bearings,

said second guide rail and said third guide rail are installed on said base by using two remaining said shafts and four remaining said bearings, and

at least one said slider is installed on or concatenated with said indication bar,

moreover wherein

said rotor rotates centering around two said shafts supporting said first guide rail, sliding said indication bar along said first guide rail,

said rotor rotates centering around two said shafts supporting said first guide rail, sliding said indication bar along said second guide rail, and

said rotor rotates centering around said indication bar, sliding at least one said slider along said third guide rail.

2. A rotation system with three degrees of freedom according to claim 1,

wherein said indication bar passes through slits, which are opened in at least one of said first guide rail and a second guide rail.

3. A rotation system with three degrees of freedom according to claim 1 or 2,

wherein

a fourth guide rail is installed on said indication bar, and

said slider slides along said fourth guide rail.

4. A rotation system with three degrees of freedom comprising a rotor comprising a part or a whole of a sphere, an indication bar, at least two sliders, at least one base, four shafts, six bearings, and three first to third guide rails,

wherein

said rotor comprises said indication bar,

said first guide rail is installed on said base by using two said shafts and two said bearings,

said second guide rail and said third guide rail are installed on said base by using two remaining said shafts and four remaining said bearings, and

at least two said sliders are installed on or concatenated with said indication bar, moreover wherein

said rotor rotates centering around two said shafts supporting said first guide rail, sliding said indication bar along said first guide rail,

said rotor rotates centering around two said shafts supporting said second guide rail and said third guide rail, sliding at least two said sliders along these guide rails, and

said rotor rotates centering around said indication bar, sliding at least two said sliders along said second guide rail and said third guide rail.

5. A rotation system with three degrees of freedom according to claim 4,

wherein said indication bar passes through a slit, which is opened in said first guide rail.

6. A rotation system with three degrees of freedom according to claim 4 or 5,

wherein

a fourth guide rail and a fifth guide rail are installed on said indication bar, and

two said sliders slide along these said guide rails, respectively.

7. A rotation system with three degrees of freedom comprising a rotor comprising a part or a whole of a sphere, an indication bar, at least two sliders, at least one base, four shafts, six bearings, and four first to third and sixth guide rails,

wherein

said rotor comprises said indication bar,

said first guide rail and said sixth guide rail are installed on said base by using two said shafts and two said bearings,

said second guide rail and said third guide rail are installed on said base by using two remaining said shafts and four remaining said bearings, and

at least two said sliders are installed on or concatenated with said indication bar, moreover wherein

said rotor rotates centering around two said shafts supporting said first guide rail and said sixth guide rail, sliding at least two said sliders along these said guide rails,

said rotor rotates centering around two said shafts supporting said second guide rail and said third guide rail, sliding at least two said sliders along these guide rails, and

said rotor rotates centering around said indication bar, sliding at least two said sliders along said second guide rail and said third guide rail.

8. A rotation system with three degrees of freedom according to claim 7,
wherein at least two said sliders pass through slits, respectively, which are opened in said first guide rail and said sixth guide rail.

9. A rotation system with three degrees of freedom according to claim 7 or 8,
wherein

a fourth guide rail and a fifth guide rail are installed on said indication bar, and

two said sliders slide along these said guide rails, respectively.

10. A rotation system with three degrees of freedom according to any one of claims 1 to 9,
wherein

said indication bar is a pipe, and

at least one wire passes through said indication bar.

11. A rotation system with three degrees of freedom according to any one of claims 1 to 10,

wherein all said shafts are installed on at least one said base so as to face with each other every two shafts.

12. A rotation system with three degrees of freedom according to any one of claims 1 to 10,

wherein

four said bearings are installed on at least one said base so as to face with each other every two shafts,

two said shafts installed on a terminal of said second guide rail and said third guide rail are installed on two said bearings installed on said base, respectively, and

two said bearings installed on another terminal of said second guide rail and said third guide rail are installed on said shafts of said third guide rail and said second guide rail, respectively.

13. A rotation system with three degrees of freedom according to any one of claims 1 to 10,

wherein

four said bearings are installed on at least one said base so as to face with each other every two shafts,

two said shafts installed on both terminals of said second guide rail are installed on two said bearings installed on said base, respectively, and

two said bearings installed on both terminal of said third guide rail are installed on said shafts of said second guide rail, respectively.

14. A rotation system with three degrees of freedom according to any one of claims 1 to 13,

wherein at least one encoder detects a direction of said rotor, by detecting at least one

rotation angle of said guide rails, said shafts and said bearings.

15. A rotation system with three degrees of freedom according to claim 14,

wherein at least one encoder detects said direction of said rotor, by concatenating it to at least one of said guide rails, said shafts and said bearings via plurality of gears.

16. A rotation system with three degrees of freedom according to claim 14 or 15,

wherein each of at least one said encoder comprises an actuator.

17. A rotation system with three degrees of freedom according to any one of claims 1 to 13,

wherein at least one actuator rotates said rotor, by rotating at least one of said guide rails, said shafts and said bearings.

18. A rotation system with three degrees of freedom according to claim 17,

wherein at least one actuator rotates said rotor, by concatenating it to at least one of said guide rails, said shafts and said bearings via plurality of gears.

19. A rotation system with three degrees of freedom according to claim 14, 15 or 16,

wherein a computer system calculates a rotation angle of said rotor, by connecting at least one said encoder to said computer system.

20. A rotation system with three degrees of freedom according to claim 16, 17 or 18,

wherein a computer system rotates said rotor, by connecting at least one said actuator to said computer system.

21. An artificial eye comprising a rotation system with three degrees of freedom according to claim 20,

wherein a camera taking a picture in a direction opposite to said indication bar is embedded in said rotor.

22. An artificial eye according to claim 21,

wherein an image rotates by that said computer system

memorizes said image taken by said camera, and

outputs each pixel of said image, exchanging an order of said pixels.